

WHAT IS CLAIMED IS:

Sub A1
1. A method for assembling a turbine nozzle for a gas turbine engine, said method comprising:

providing a hollow doublet including a leading airfoil vane and a trailing airfoil vane coupled by at least one platform, wherein each airfoil vane includes a first sidewall and a second sidewall that extend between a respective leading and trailing edge; and

inserting an insert into at least one of the airfoil vanes, wherein the insert includes a first sidewall including a first plurality of cooling openings that extending therethrough, and a second sidewall including a second plurality of cooling openings extending therethrough, and wherein the first plurality of cooling openings facilitate cooling the airfoil more than the second plurality of cooling openings.

2. A method in accordance with Claim 1 wherein each airfoil vane includes a pressure side and a suction side, inserting an insert into at least one of the airfoil vanes further comprises inserting an insert into at least one of the airfoil vanes to facilitate biasing cooling airflow towards the suction side of the airfoil vane.

3. A method in accordance with Claim 1 wherein the first sidewall of each airfoil vane is convex, and the second sidewall of each airfoil vane is concave, inserting an insert into at least one of the airfoil vanes further comprises inserting an insert into at least one of the airfoil vanes to facilitate biasing cooling airflow towards the convex side of the airfoil vane.

4. A method in accordance with Claim 1 wherein inserting an insert into at least one of the airfoil vanes further comprises inserting a first insert into the leading airfoil vane and a second insert into the trailing airfoil vane to facilitate cooling the trailing airfoil vane more than the leading airfoil vane.

5. A method in accordance with Claim 1 wherein inserting an insert into at least one of the airfoil vanes further comprises inserting a first insert into the

leading airfoil vane and a second insert into the trailing airfoil vane to facilitate reducing thermal stresses within the airfoil nozzle.

~~6. A method in accordance with Claim 1 wherein inserting an insert into at least one of the airfoil vanes further comprises inserting a first insert into the leading airfoil vane and a second insert into the trailing airfoil vane, wherein the first and second inserts are non-identical.~~

6. A method of operating a gas turbine engine, said method comprising:

directing fluid flow through the engine using at least one turbine airfoil nozzle that includes a leading airfoil and a trailing airfoil coupled by at least one platform that is formed integrally with the leading and trailing airfoils, and wherein each respective airfoil includes a first sidewall and a second sidewall that extend between respective leading and trailing edges to define a cavity therein; and

directing cooling air into the turbine airfoil nozzle such that the nozzle trailing airfoil is cooled more than the leading airfoil.

7. A method in accordance with Claim 6 wherein directing cooling air into the turbine airfoil nozzle further comprises directing airflow into each respective airfoil cavity through an insert installed within the turbine nozzle to facilitate reducing thermal stresses within the turbine airfoil nozzle.

8. A method in accordance with Claim 6 wherein directing cooling air into the turbine airfoil nozzle further comprises directing airflow through at least one insert installed within the turbine nozzle that includes a first plurality of cooling openings in flow communication with the airfoil first sidewall, and a second plurality of cooling openings in flow communication with the airfoil second sidewall, wherein the first plurality of cooling openings facilitate cooling the airfoil more than the second plurality of cooling openings.

⁹10. A method in accordance with Claim ⁸9 wherein the first sidewall defines a suction side of the respective airfoil, and the second sidewall defines a pressure side of the respective airfoil, directing cooling air into the turbine airfoil nozzle further comprises biasing airflow entering the airfoil with the insert towards the suction side of the airfoil.

¹⁰11. A method in accordance with Claim ⁸9 wherein the first sidewall is convex, and the second sidewall is concave, directing cooling air into the turbine airfoil nozzle further comprises biasing airflow entering the airfoil with the insert towards the convex side of the airfoil.

¹¹12. A method in accordance with Claim ⁶7 wherein directing cooling air into the airfoil nozzle further comprises directing airflow into each respective airfoil through a pair of non-identical inserts installed within the turbine nozzle, such that the trailing airfoil is biased to receive more cooling air flow than the leading airfoil.

¹²13. A turbine nozzle for a gas turbine engine, said nozzle comprising:

a pair of identical airfoil vanes coupled by at least one platform that is formed integrally with said airfoil vanes, each said airfoil vane comprising a first sidewall and a second sidewall connected at a leading edge and a trailing edge to define a cavity therebetween; and

at least one insert configured to be inserted within said airfoil vane cavity and comprising a first sidewall and a second sidewall, said insert first sidewall comprising a first plurality of openings extending therethrough for directing cooling air towards at least one of said airfoil vane first and second sidewalls, said insert second sidewall comprising a second plurality of openings extending therethrough for directing cooling air towards at least one of said airfoil vane first and second sidewalls, said first plurality of openings configured to facilitate more vane sidewall cooling than said second plurality of openings.

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A nozzle in accordance with Claim ¹²~~13~~ wherein said airfoil vane first sidewall defines an airfoil vane suction side, said airfoil vane second sidewall defines an airfoil vane pressure side, said at least one insert further configured to be inserted within at least one airfoil cavity such that said insert first sidewall is adjacent said airfoil vane first sidewall.

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A nozzle in accordance with Claim ¹³~~14~~ wherein said airfoil vane first sidewall is convex, said airfoil vane second sidewall is concave, said insert further configured to facilitate cooling said airfoil vane first sidewall more than said airfoil vane second sidewall.

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A nozzle in accordance with Claim ¹³~~14~~ wherein said at least one insert further configured to be inserted such that said insert first sidewall is in flow communication and adjacent said airfoil vane first sidewall, said insert first sidewall is convex, said insert second sidewall is concave.

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A nozzle in accordance with Claim 14 wherein said pair of airfoil vanes further comprise an upstream airfoil vane and a downstream airfoil vane, said downstream airfoil vane downstream from said upstream airfoil vane, said at least one insert further comprises a first insert installed within said leading airfoil vane, and a non-identical second insert installed within said trailing airfoil vane, said inserts configured to facilitate cooling said trailing airfoil vane more than said leading airfoil vane.

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A nozzle in accordance with Claim 14 wherein said at least one insert first plurality of cooling openings is greater than said insert second plurality of cooling openings.

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A nozzle in accordance with Claim ¹³~~14~~ wherein said at least one insert further configured to facilitate reducing thermal stresses within said nozzle.